



## Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at <http://about.jstor.org/participate-jstor/individuals/early-journal-content>.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact [support@jstor.org](mailto:support@jstor.org).

*A Review of the Mines and Mining Industry of Belgium.* By RICHARD VALPY, Esq. *Founded on the Report of the Minister of Public Works to the King, dated Brussels, 1st June, 1842.*

[Read before the Statistical Section of the British Association, at Southampton, September 10th, 1846.]

THE most casual observer of the course of events can scarcely have failed to notice the growing desire, now more or less manifest in the people of all nations, to acquire authentic information respecting the various resources of their own and foreign countries; happily not with the view to kindle the lust of conquest, violence, or plunder, but to extend international commerce, and guide it into new channels, as a fruitful source of individual and national wealth, and a means of multiplying and cheapening the necessities and comforts of life.

The wish to contribute, in however trifling a degree, to this desire for statistical knowledge, has been the object in the preparation of this paper.

As the country of which we treat is well known to be rich in mineral resources, and to possess an enterprising and industrious population for their development, we are sure that an exposition of the condition and progress of the mining industry of Belgium will not fail to be generally acceptable; but in this instance we are rather backward in producing the present observations, from the fear that they may not be deemed sufficiently complete to be of value or interest, but we have been induced to abstract from the report the principal facts, as they are the first authentic statistics of the kind that have been published, and we hope that their existence in the present paper, may prove to be advantageous should we have an opportunity to continue the subject at a future period. Coal is the most important and valuable of the mineral products of Belgium, and the extent of the supply gives to Belgium the second position in Europe, as a coal-producing country.

In the three principal coal countries, the ratio of the coal districts to the total area is—

In Great Britain .....	$\frac{1}{30}$ th.
„ Belgium .....	$\frac{1}{12}$ nd.
„ France .....	$\frac{1}{10}$ th.

the area of the coal districts being—

In Great Britain .....	2,930,000 acres.
„ Belgium .....	335,000 „
„ France .....	630,000 „

and the annual produce is calculated to amount—

In Great Britain (according to Mr. Porter*), to about 34,000,000 tons.	
„ Belgium .....	4,500,000 „
„ France .....	3,783,000 „
And in the Germanic Union .....	3,000,000 „

Of the nine provinces of Belgium only four contain coal mines, which are separated into three divisions, the first being the province of Hainault, the second the provinces of Namur and Luxemburg, and the third the province of Liège.

\* *Statistical Journal*, Vol. vii., p. 284.

The area of the coal fields in these divisions is—

In the 1st division .....	189,312 acres.
„ 2nd division .....	41,607 „
„ 3rd division .....	104,362 „

Making for the kingdom an area of 335,281 acres.

In 1838 the total number of coal mines in the kingdom was 307, with 480 pits in work, and 172 constructing; 37,171 persons were employed; and the quantity of coal raised amounted to 3,201,584 tons.

For the three years 1836, 1837, and 1838, the following table exhibits the extent of the mining operations in each division of the coal mines:—

Divisions.	Number of Mines.	Number of Pits.						Number of Persons employed.			Quantities of Coal raised.		
		In Work.			Constructing								
		1836	1837	1838	1836	1837	1838	1836	1837	1838	1836	1837	1838
Hainault ....	154	251	283	318	39	77	123	20,880	23,011	25,241	Tons. 2,307,085	Tons. 2,425,152	Tons. 2,372,422
Namur .....	38	46	47	57	23	26	33	889	1,043	1,282	77,748	90,808	102,082
Liège .....	115	92	104	105	19	18	16	7,375	9,313	10,648	616,613	654,727	727,080
For the Kingdom .....	307	389	434	480	81	121	172	29,144	33,367	37,171	3,001,446	3,170,687	3,201,584

The total number of coal pits in 1829 was about 422, and in 1838 they numbered 652, an increase of 54 per cent. The increase in the number of pits was greatest in the first division of the mines, being as much as 60 per cent.

It is stated, that twenty or thirty years ago the number of pits to one mine was greater than is shewn by the above table, but in consequence of great improvements in the mining process, the pits are now made to yield larger quantities of coal than formerly.

In 1838 the total number of persons employed in the coal mines of the kingdom was 37,171; in 1829 only 29,717 persons were so employed; the difference in the period was therefore 8,454 persons, or 28 per cent.

In the division of the province of Hainault, 19,593 persons were employed in 1829, and 25,241 in 1838, which gives an increase of 5,648 persons, or 29 per cent. In the same division the increase on the average of 1837 and 1838 over that of 1834 and 1835, was 15 per cent.

From 1829 to 1834 there was a considerable falling off in the number of persons employed in the coal mines in the province of Liège—9,350 was the number employed in the former, and 6,540 in the latter of those years, making a decrease in five years of 2,810 persons, or 30 per cent. The number increased rapidly in 1837 and 1838, and amounted to 10,648 in 1838, or 63 per cent. over 1834. Still a comparison between 1838 and 1829 only exhibits an increase in the province of 1,298 persons, or 13 per cent. during the nine years.

We are unfortunately without the means of comparing the total quantities of coal raised in Belgium during a period of years. We can only state that the produce of the kingdom was 3,001,446 tons in 1836, and 3,201,584 tons in 1838; a difference of about 200,000 tons, or 7 per cent. in favour of 1838 over 1836.

As the province of Hainault produces about three-fourths of the total quantity of coal raised in Belgium, a comparison of the yield of coal in that division, may perhaps afford us some idea of the rate of increase in the quantity of coal brought to the surface throughout the kingdom.

The following table shows the quantity of coal produced in the Hainault division of the mines, in each year from 1829 to 1838:—

1829.	1830.	1831.	1832.	1833.	1834.	1835.	1836.	1837.	1838.
Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
1,729,417	1,879,230	1,733,239	1,706,302	1,910,137	1,785,819	1,929,793	2,307,085	2,425,152	2,372,422

By this table we find that the increase in the quantity of coal raised in the nine years, from 1829 to 1838 was 643,005 tons, or 37 per cent.; and that the average production of the five years, from 1834 to 1838, exceeded that of the previous five years by 372,389 tons, or 21 per cent.

The province of Liège ranks next in importance of produce to the province of Hainault; and there the production increased about 30 per cent. in the nine years, and 25 per cent. on the average of the two quinquennial periods.

It is true that the progress here exhibited is not so remarkable as the development that has of late years taken place in the production of coal in other continental countries, but it must nevertheless be viewed as satisfactory, when we consider that coal-mining is of greater antiquity in Belgium, and consequently of more gradual extension. Furthermore, we lack information respecting early years, on which to found a more comprehensive comparison, and by which no doubt a rapid increase might be shown. But we have no doubt that the progress to the present period has been satisfactory, for as we have before stated, the present annual production is calculated at 4,500,000 tons, which would give an increase of 1,300,000 tons over 1838, or 40 per cent. in the eight years.

With regard to the average produce per mine, the figures in the first table enable us to calculate as follows:—

In 1838, for the 1st division .....	15,405 tons per mine
„ 2nd „ .....	2,686 „
„ 3rd „ .....	6,322 „
„ for the Kingdom.....	10,429 „

The average produce per pit, and to each person employed, in each of the divisions, is given in the next table for the three years 1836, 1837, and 1838.

DIVISIONS.	AVERAGE PRODUCE.					
	Per Pit.			To each Person Employed.		
	1836.	1837.	1838.	1836.	1837.	1838.
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
1. Province of Hainault	9,191	8,569	7,460	110	106	94
2. „ Namur ....	1,690	1,932	1,791	87	87	80
3. „ Liège .....	6,702	6,295	6,924	84	70	68
For the Kingdom....	7,716	7,306	6,670	103	95	86

The results here set forth will of course be influenced by various circumstances, such as the depth of the pits, the quantity of water present, the direction of the strata, and the tenacity of the mineral, &c.

It will be observed that, in general, the production per pit and to each person has diminished. There is an increase, however, by the pit, in the provinces of Liège and Namur.

Although these results may be looked upon as unfavourable for the few years specified in the above table, yet there is no doubt that the quantity raised to each person has increased of late years, and the decrease to each person in 1837 and 1838, may be partly occasioned by the rather sudden increase in those years of the persons employed, many of whom were perhaps engaged for the purpose of constructing new pits, and other works independent of raising coal.

In the province of Hainault there was an increase of  $24\frac{1}{2}$  per cent. in the production per individual employed in 1836, over 1829, but in 1838 the increase was reduced to  $6\frac{1}{2}$  per cent., still if we compare the average from 1834 to 1838 with the year 1829, we shall find that the increase was as much as 10 per cent.; and similar results will be observed for the province of Liège, where the increase in 1836 over 1829 amounted to 37 per cent.; it fell to 11 per cent. in 1838, but it was as high as 26 per cent. on the average of 1834 to 1838 over 1829. Respecting the value created by the raising of coal in Belgium, we are almost obliged to confine ourselves to the statement, that in 1838 it amounted to—

In the 1st division .....	£1,268,728
„ 2nd division.....	31,392
„ 3rd division.....	412,600
Making a total of .....	£1,712,720

and if we add to this sum the additional value, consequent on the transport of the coal from the place of production to the place of consumption, the total value created, would not be far short of three millions and a half sterling, or about double the first cost.

In the province of Liège the total value of the produce increased 190 per cent. from 1832 to 1838, while 60 per cent. was the increase on the production.

The average cost of production per ton in 1838, if calculated on the value as given above, would be—

In the 1st division .....	£0 10 8 $\frac{4}{10}$
„ 2nd division .....	0 6 1 $\frac{8}{10}$
„ 3rd division .....	0 11 4 $\frac{2}{10}$
For the Kingdom .....	£0 10 8 $\frac{4}{10}$

The selling price has risen considerably in each division of the mines. In the first division the increase was—

	In the Nine Years, 1829 to 1838.		On the Average of the Two Quinquennial Periods from 1829 to 1838.	
	1st Quality.	2nd Quality.	1st Quality.	2nd Quality.
District of Mons .....	30 per Cent.	55 per Cent.	$\frac{1}{2}$ per Cent.	8 per Cent.
„ of Charleroy ..	28 „	57 „	31 „	35 „

The average price per ton in 1838 was—

	1st quality.	2nd quality.	3rd quality.
District of Mons.....	17s. 3 $\frac{7}{10}$ d.	14s. 3d.	.....
District of Charleroy ....	19s. 6d.	18s. 8d.	13s. 6 $\frac{2}{10}$ d.

In the province of Namur the average price per ton of coal of all qualities, at the pit's mouth was 6s. 4 $\frac{2}{10}$ d.

In the province of Liège the increase in the price was—

In the Nine Years, 1829 to 1838.		On the Average of the Two Quinquennial Periods from 1829 to 1838.	
1st Quality.	2nd Quality.	1st Quality.	2nd Quality.
23 per Cent.	39 per Cent.	18 per Cent.	25 per Cent.

The average price per ton in 1838 was—

1st quality, 23s. 11 $\frac{6}{10}$ d.	2nd quality, 16s. 6 $\frac{1}{2}$ d.
--	--------------------------------------

The wages of the persons employed, although subject to some depreciation in 1830, and a few subsequent years, advanced with the increased production and value of coal.

It appears that in the Hainault division of the mines, the average rate of the wages per day was—

	In 1830.	In 1838.	Increase in 1838.
In the district of Mons .....	20d.	22 $\frac{1}{2}$ d.	12 per cent.
„ of Charleroy ....	11 $\frac{1}{2}$ d.	17 $\frac{1}{2}$ d.	52 „

The per centage difference between the wages in the two districts of the province of Hainault in 1838 was 29 per cent. higher in the district of Mons.

The average rate of daily wages in the province of Namur in 1838 was 16 $\frac{1}{10}$ d.

And in the province of Liége, daily wages averaged—

In 1829.	In 1838.	Increase in 1838.
12 $\frac{3}{10}$ d.	18 $\frac{1}{2}$ d.	51 per cent.

Thus we find the following to have been the average rate of daily wages, paid to persons employed in raising coal, in each division of the mines, in 1838.

1st division, Province of Hainault.....	20d.
2nd   "           "       Namur .....	16 $\frac{1}{10}$
3rd   "           "       Liége .....	18 $\frac{1}{2}$

Making the Average for the Kingdom ..... 18 $\frac{3}{10}$ d.

Great facilities exist in Belgium for the distribution of the coal from the mines. By means of rivers, canals, and good roads, the Hainault coal finds an easy and ready exit to the two Flanders, Holland, France, and to Brussels, and the other principal towns of the province.

The produce of the mines in Namur is chiefly consumed within that province.

The coal from the mines in the province of Liége is more than sufficient for the local consumption, and the Meuse affords the means of transport for the surplus, both to France and Holland, and is also one of the principal routes for the interior.

Belgium exports nearly one-fourth of the produce of her coal mines to foreign countries, we might almost say to France alone; for, although Holland ranks next to France as a market for Belgian coal, yet the quantities sent to Holland, and other foreign countries, are quite insignificant in comparison with the export to France.

The following short table of the exports of Belgian coal in each year, from 1835 to 1840, shows that France receives by far the largest part of the surplus coal of Belgium.

Years.	Total Quantities Exported.	Quantities Exported to France.
	Tons.	Tons.
1835	683,065	672,705
1836	759,686	747,878
1837	774,879	766,382
1838	761,574	752,632
1839	732,344	714,269
1840	765,442	705,356

The establishments for working the coal mines of Belgium may be considered as being in a state of transition, with regard to their constitution and management. Capital is now exerting its powerful influence, and societies of wealth and intelligence are gradually supplanting the ancient ownership, whether of individuals, or of poorer societies composed of the miners themselves, or of persons of like means in general.

In 1834, and subsequent years, coal-mining attracted the attention of capitalists, who formed joint-stock companies, called "Sociétés

Anonymes" for prosecuting that branch of industry. Mines were purchased by these companies, various improvements were introduced in their management; and smelting, and other works, for the preparation of iron and the manufacture of machinery, were added to the establishments.

Of the 304 coal mines in Belgium in 1838, 221 remained the property of the old style of company called "Sociétés Civiles;" it being a rare occurrence for a mine of any consequence to belong to a private individual.

The following table exhibits the operations of these companies, respectively, in each year, from 1834 to 1838.

Divisions of the Mines.	Num- ber of Mines.	Pits in work and construction.					Tons of coal extracted.				
		1834	1835	1836	1837	1838	1834	1835	1836	1837	1838
" SOCIETES ANONYMES."											
1st. Hainault	68	74	83	127	182	233	782,667	868,271	1,114,707	1,169,320	1,105,387
2nd. Namur	2	5	4	9	8	15	6,186	7,070	4,419	8,720	3,177
3rd. Liège	13	13	13	17	20	23	94,819	110,871	103,095	109,666	153,724
The Kingdom	83	92	100	153	210	271	883,672	986,212	1,222,221	1,287,706	1,262,288
" SOCIETES CIVILES."											
1st. Hainault	86	109	112	163	178	208	1,003,151	1,061,521	1,192,377	1,225,821	1,267,635
2nd. Namur	36	54	53	60	65	73	90,937	71,995	73,329	82,088	93,905
3rd. Liège ..	102	86	87	95	102	108	421,801	479,995	509,294	545,061	573,356
The Kingdom	224	249	252	318	345	389	1,515,909	1,613,511	1,775,000	1,882,970	1,939,296

The progress, therefore, of the new companies, or the "Sociétés Anonymes," was much more rapid than that of the "Sociétés Civiles," as may be readily observed in the following table, which exhibits the per centage increase, in the number of pits and the production.

Divisions of the Mines.	In the number of the Pits.	Sociétés.	
		Anonymes.	Civiles.
1st. Hainault .....	Increase.	214 per cent.	90 per cent.
2nd. Namur .....	"	200 "	35 "
3rd. Liège .....	"	76 "	25 "
The Kingdom .....	Increase.	194 per cent.	56 per cent.
Divisions of the Mines.	In the Production.	Sociétés.	
		Anonymes.	Civiles.
1st. Hainault .....	Increase.	41 per cent.	26 per cent.
2nd. Namur .....	Decrease. Increase.	- 48 "	+ 8 "
3rd. Liège .....	Increase.	62 "	35 "
The Kingdom .....	Increase.	42 per cent.	27 per cent.



These results, although for a period of five years only, may be considered sufficient to point out what will be the probable progress of the respective societies.

The other mineral productions of Belgium that are worthy of notice, appear to be confined to iron and calamine; lead is also produced, but in very small quantities.

The provinces we have before mentioned as containing the coal are likewise those, in which the several Ores are found.

The number of places for extracting Ore, was as follow, in the three years, 1836, 1837, and 1838.

Divisions of the Mines.	Number of Places for extracting Ore, in work.								
	Subterraneous.			Open.			Total.		
	1836.	1837.	1838.	1836.	1837.	1838.	1836.	1837.	1838.
1. Province of Hainault....	118	215	14	3	4	1	121	219	15
2. Provinces of Namur } and Luxemburg.....	833	817	489	228	164	80	1,061	981	569
3. Province of Liège.....	140	175	154	4	3	2	144	178	156
For the Kingdom .....	1,091	1,207	657	235	171	83	1,326	1,378	740

And the following were the number of persons employed, and the quantities of each kind of Ore extracted, in the same years.

Divisions of the Mines.	Number of Persons employed.			Quantities of Ore extracted.			Nature of Ore.
	1836.	1837.	1838.	1836.	1837.	1838.	
1. Province of } Hainault.....	524	927	206	Tons. 39,261	Tons. 72,867	Tons. 31,253	Iron
2. Provinces of } Namur and } Luxemburg....	3,213	3,143	1,687	519,404 528	514,064 206	227,495 341	Iron Lead
3. Province of } Liège .....	1,067	1,167	1,082	66,824 5 9,191	86,301 30 16,074	70,062 26 17,402	Iron Lead Calamine
For the Kingdom	4,804	5,237	2,975	625,489 533 9,191	673,232 236 16,074	328,810 367 17,402	Iron Lead Calamine

By far the greater proportion of the iron ore raised in Belgium is furnished by the second division of the mines, comprising the provinces of Namur and Luxemburg; next in the order of production is the province of Liège, and last comes the province of Hainault. Thus, when we turn from coal to iron, we find the provinces quite reversed in the order of production.

Namur and Luxemburg, also supply the principal part of what lead is produced.

Calamine appears as the produce solely of Liège.

It appears that the extraction and preparation of iron, was carried on with inconsiderate ardour in the years 1835, 1836, and 1837; the natural consequence of which was, that the supply greatly exceeded the demand, and in 1838, the operations of the iron works were seriously depressed. The preceding tables will show, that, in 1838, the places of extraction, the persons employed, and the production, were all reduced, in number and quantity, to nearly one-half of what they had been in the previous two years, 1836 and 1837; and extensive as the reduction then was, it did not reach its limit in 1838, but became more serious still in subsequent years.

In 1838, Belgium possessed the following number of establishments for preparing the several mineral productions:—

221 for iron.  
8 „ copper.  
7 „ zinc.  
2 „ lead.

Total ..... 238

The number of furnaces in each of the producing provinces amounted in 1838, to—

PROVINCES.	Using Charcoal		Using Coke.		TOTAL.
	In Work.	Not in Work.	In Work.	Not in Work.	
Hainault .....	5	3	9	17	34
Namur .....	41	3	3	2	49
Luxemburg .....	27	7	—	—	34
Liège .....	5	1	8	8	22
For the Kingdom .....	78	14	20	27	139

We cannot glance at this table without observing how largely the furnaces using charcoal predominate over those which are worked with coal, especially in the provinces of Namur and Luxemburg.

Most of the establishments for working minerals in the province of Hainault are situated in the district of Charleroy. In that district eight furnaces, using coke, were constructed during the period from 1826 to 1835, and, with two furnaces using charcoal, consumed annually, 117,840 tons of washed ore, 144,354 tons of coal, and 4,778 tons of charcoal; and produced 28,478 tons of cast iron, which is in the ratio of one ton of metal to about 4 tons 3 cwt. of ore.

Three forges, on the English system, consuming annually 10,198 tons of coal, and producing 3,731 tons of bar and rod iron, were also established during the same period.

The total value of cast and wrought iron produced in the district of Charleroy, was estimated in 1834, at 281,800*l*.

In 1838, the number of furnaces in this district amounted to 32, of which 8 used charcoal, and 24 used coke; of these only 5 of the former, and 9 of the latter, were in work.

From inquiries made at the end of the year 1839, it was shown

that, in the province of Hainault, the production of cast iron had risen to 43,690 tons, and of wrought iron to 24,550 tons; the value of these quantities is estimated, on the average, at 4*l.* 16*s.* a ton for cast iron, and 10*l.* a ton for wrought iron, which would give as the total value of

Cast iron .....	£216,000
Wrought.....	250,000
<hr/>	
Making a total of £466,000	

as the value of the produce of the iron works in the province of Hainault.

It will be seen by the last table how large a proportion of the furnaces, belong to the provinces of Namur and Luxemburg. It is calculated that the furnaces in those provinces could produce annually about 65,000 tons of cast iron. The declared production in 1841, by furnaces using charcoal, was—

In the province of Namur.....	17,734 tons.
„ of Luxemburg .....	5,420 „
<hr/>	
Total .....	23,154 tons.

The cast iron made in that part of the country is generally of superior quality, and the principal market for it is Liége.

In 1838 the province of Namur contained the following number of mineral works, viz.

	72 for preparing iron.
8	„ copper.
1	„ lead.
<hr/>	
Total .....	81

The province of Luxemburg in the same year, numbered 43 such works, all of which were for working iron. The preparation of iron and zinc principally engage the mineral works in the province of Liége. In 1838 it appears that there were

	52 establishments for iron.
7	„ zinc.
1	„ lead.
<hr/>	
Total .....	60

We have seen it stated in a number of the “Mining Journal,” that the consumption of iron in Belgium, amounted in the year 1844, to 120,000 tons, in England to 1,200,000 tons, in France to 480,000 tons, and in the Germanic Union to 300,000 in the same year.

The manufacture of zinc in the province of Liége appears to have met with an important development; the produce in 1838 quadrupled that of 1835, and doubled that of 1836.

The Belgian imports and exports of the several metals just referred to, consisted of the following quantities in each year, from 1835 to 1840,—

Metals.	1835.	1836.	1837.	1838.	1839.	1840.
<b>IMPORTS.</b>	<b>Tons.</b>	<b>Tons.</b>	<b>Tons.</b>	<b>Tons.</b>	<b>Tons.</b>	<b>Tons.</b>
Iron, cast of all kinds	1,910	3,720	9,651	5,210	1,930	510
„ wrought „	1,298	1,413	1,339	1,632	1,546	1,724
„ old and broken	1,758	4,652	3,388	1,677	1,307	394
Lead, in pigs .....	2,175	1,751	1,659	2,174	2,725	2,550
Zinc, raw .....	4	480	530	308	622	13
<b>EXPORTS.</b>						
Iron, cast of all kinds	5,234	7,079	6,521	5,813	7,052	10,250
„ wrought „	4,503	4,521	3,614	4,621	4,844	6,089
Zinc, raw and rolled..	1,607	1,220	1,625	2,616	3,305	3,069
Machinery, value ....£	159,592	120,364	130,932	245,444	112,496	160,172

This table shows that iron and zinc are the only metals of which Belgium produces more than is required for the home consumption. The quantities of the metals exported are comparatively small, yet the progress exhibited in the above years appears to warrant the expectation that iron and zinc will become, in future, a more important part of the export trade. Nails form a large portion of the wrought iron exported. France and Holland are the chief foreign markets for the iron, as well as the coal, of Belgium.

Before closing our paper, it may be interesting to devote a little attention to the number and nature of the accidents which have happened in the Belgian mines. The returns, for this branch of the subject, extend over 20 years, from 1821 to 1840. During that interval 1,352 accidents occurred, occasioning severe hurts to 882, and death to 1,710 work-people, and making together a total of 2,592 sufferers.

The following table exhibits the total number of accidents, with their nature and results, in each of the two decennial periods, and in the 20 years from 1821 to 1840.

Nature of Accidents.		Number of Accidents.			Results of Accidents.					
					Number of Persons Wounded.			Number of Persons Killed.		
		1821 to 1830.	1831 to 1840.	1821 to 1840.	1821 to 1830.	1831 to 1840.	1821 to 1840.	1821 to 1830.	1831 to 1840.	1821 to 1840.
Happening in the Pits.	In descending or ascending by cords or chains .....	107	119	226	24	26	50	115	146	261
	Ditto ditto by ladders .....	43	52	95	7	23	30	38	35	73
	From other causes .....	118	144	262	22	31	53	102	130	232
	Falling in of Materials ....	146	243	389	44	70	114	129	205	334
	Explosions of Fire-damp .....	50	80	130	215	257	472	198	307	505
	Inundations .....	16	13	29	16	....	16	64	104	168
	Blasting .....	35	40	75	35	44	79	14	17	31
	Not specified .....	34	112	146	10	58	68	34	72	106
	<b>Total .....</b>	<b>549</b>	<b>803</b>	<b>1,352</b>	<b>373</b>	<b>509</b>	<b>882</b>	<b>694</b>	<b>1,016</b>	<b>1,710</b>

According to the frequency of their occurrence during the 20 years, the accidents will stand in the following order:—

	No.	Per Cent.
Falling in of material .....	389	or 28·8
Accidents in the pits, not specified .....	262	„ 19·4
In descending or ascending by cords or chains.....	226	„ 16·7
Accidents not otherwise specified .....	146	„ 10·8
Explosions of fire-damp .....	130	„ 9·7
In descending or ascending by ladders.....	95	„ 7·0
Blasting .....	75	„ 5·5
Inundations .....	29	„ 2·1

Total ..... 1,352 100·0

The comparative results of the several kinds of accidents in the kingdom, on the average of the same periods, are shown in the next table.

Nature of Accidents,	1821 to 1830.			1830 to 1840.			1821 to 1840.		
	Persons Wounded.	Persons Killed.	Persons Wounded and Killed.	Persons Wounded.	Persons Killed.	Persons Wounded and Killed.	Persons Wounded.	Persons Killed.	Persons Wounded and Killed.
	Per Cent.	Per Cent.	Per Cent.	Per Cent.	Per Cent.	Per Cent.	Per Cent.	Per Cent.	Per Cent.
Explosion of Fire-damp	57·6	28·5	38·7	50·5	30·2	37·0	53·5	29·5	37·7
Falling in of Material	11·8	15·6	16·2	13·8	20·2	18·0	12·9	19·5	17·3
Blasting .....	9·4	2·0	4·6	8·6	1·7	4·0	9·0	1·8	4·2
In descending or ascending by cords or chains .....	6·4	16·6	13·1	5·1	14·4	11·3	5·7	15·3	12·0
In the Pits, not specified	5·9	14·7	11·6	6·1	12·8	10·6	6·0	13·6	11·0
Inundations .....	4·3	9·2	7·5	....	10·2	6·8	1·8	9·8	7·1
Causes not specified ....	2·7	4·9	4·1	11·4	7·1	8·5	7·7	6·2	6·7
In descending or ascending by ladders .....	1·9	5·5	4·2	4·5	3·4	3·8	3·4	4·3	4·0
	100·0	100·0	100·0	100·0	100·0	100·0	100·0	100·0	100·0

In what proportions these results occurred in the different divisions of the mines may be seen in the first table in the following page; by which it will be observed, that in the provinces of Hainaut and Liège, the accidents caused by explosions were the most disastrous, amounting to  $34\frac{1}{2}$  per cent. of the total injuries and deaths in the former, and 43·8 per cent. in the latter province. Falling in of material, many of which accidents are consequent on the loosening effects of blasting, stands next, and in the provinces of Namur and Luxemburg, nearly one-half of the lives destroyed is owing to that cause. The ascent or descent of the pit, in buckets or otherwise, by cords or chains, forms the third principal cause of danger, occasioning nearly 20 per cent. of the deaths in the provinces of Namur and Luxemburg.

Nature of Accidents.	Provinces of Hainault.			Provinces of Namur and Luxemburg.			Province of Liège.		
	Persons Wounded.	Persons Killed.	Persons Wounded and Killed.	Persons Wounded.	Persons Killed.	Persons Wounded and Killed.	Persons Wounded.	Persons Killed.	Persons Wounded and Killed.
Explosion of Fire-damp	Per Cent. 55.5	Per Cent. 24.1	Per Cent. 64.5	Per Cent. 10.0	Per Cent. 1.6	Per Cent. 4.3	Per Cent. 54.6	Per Cent. 38.0	Per Cent. 43.8
Falling in of Material	10.5	20.3	37.0	56.9	45.2	48.9	12.4	16.6	15.1
Blasting .....	3.4	1.0	11.8	3.3	3.2	3.3	15.3	2.6	7.0
In descending or ascending by cords or chains .....	5.9	12.3	10.2	6.7	19.4	15.2	5.3	15.3	13.9
In the Pits, not specified	4.3	13.1	10.2	13.3	12.9	13.0	7.3	14.2	11.8
Inundations .....	3.6	15.5	11.5	....	....	....	....	4.2	2.7
Causes not specified .....	11.6	6.9	5.5	6.7	14.5	12.0	3.6	4.7	4.3
In descending or ascending by ladders .....	5.2	6.8	6.3	3.3	3.2	3.3	1.5	1.4	1.4
	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

We must have been struck during the perusal of the figures relating to the several accidents, with the great difference in their numbers and ratio of mortality, in connexion with the two plans of ascent and descent, by cords and by ladders. Referring to the first table connected with the subject, we find that, on the average of the 20 years, from 1821 to 1840, the excess in the number of accidents from the use of cords, was no less than 138 per cent., and the mortality was higher by 13 per cent. This circumstance affords a proof of the utility of recording such events, for had we no such basis for observation, the mere occurrence of any serious accident from time to time, might produce no steps towards prevention, but the comparison of recorded facts, makes it evident to all, that one of two means used to attain the same end, is attended with more frequent and fatal accidents than the other, and in this instance measures have been taken, we believe, to mitigate and remedy the evil, by discouraging a practice proved to be so dangerous, and encouraging the use of inclined planes, and other safer means.

The average number of the persons employed in the mines in the several provinces, on the average of each of the two decennial periods, and in the 20 years, from 1821 to 1840, was

Provinces.	Average number of Persons employed.		
	1821 to 1830.	1831 to 1840.	1821 to 1840.
Hainault.....	16,000	20,500	18,250
Namur and Luxemburg....	1,880	2,680	2,280
Liège .....	8,100	8,320	8,210
The Kingdom .....	25,980	31,500	28,740

If we compare these numbers with those of the accidents and their results, we shall find the following per centage ratio, between the number and consequences of the accidents and the persons employed, on the average of the same periods.

Provinces.	1821 to 1830.				1831 to 1840.				1821 to 1840.			
	Accidents.	Persons Wounded.	Persons Killed.	Persons Wounded and Killed.	Accidents.	Persons Wounded.	Persons Killed.	Persons Wounded and Killed.	Accidents.	Persons Wounded.	Persons Killed.	Persons Wounded and Killed.
Hainault .....	Per cent. 1·5	Per cent. 0·7	Per cent. 2·1	Per cent. 2·8	Per cent. 2·2	Per cent. 1·6	Per cent. 2·6	Per cent. 4·2	Per cent. 3·8	Per cent. 2·4	Per cent. 4·8	Per cent. 7·2
Namur and Luxemburg.....	1·5	0·5	1·3	1·8	1·9	0·7	1·5	2·2	3·5	1·3	2·7	4·0
Liège .....	3·4	3·1	4·2	7·3	3·6	1·9	5·2	7·1	7·0	5·0	9·4	14·4
The Kingdom .....	2·1	1·4	2·7	4·1	2·5	1·6	3·2	4·8	4·7	3·1	5·9	9·0

It will be perceived, that the accidents increased in number, and their consequences were more serious, in the second decennial period; but the greater development of mining operations, and the consequent employment of several new and inexperienced hands, added to the greater danger of inundation, falling in of material, and explosion of fire-damp, from the extension of the works in the mines, may partly account for the increase.

The Belgian Government, however, has exerted itself, with praiseworthy energy, to diminish the number of accidents, by establishing enactments for the careful execution of works in the mines; directing the particular attention of the engineers to the maintenance of efficient ventilation; encouraging the discovery of means for the greater prevention of fire-damp explosion; and in various other ways of precaution; and to alleviate the sufferings, consequent on such accidents, by favouring the establishment of benefit societies, and various other local charitable institutions for the assistance of the miners and their families.

However incomplete this short review may prove to be, and whatever fluctuations may have been noticed in some branches of the mining industry, sufficient facts have been brought forward, we trust, to confirm our views of the mineral wealth possessed by Belgium, and to lead us to hope that that wealth may receive, in future, an important development for the benefit of the native industry, and the commerce of foreign countries.